

Remarks

Entry of this Amendment under 37 C.F.R. § 1.116 is respectfully requested because it places the application in condition for allowance or alternately clarifies issues, thereby placing the application in better form for appeal. No new matter is believed to be added to the application by this response.

Status of the Claims

Claims 1-17 are pending in the application and stand rejected.

Rejection Under 35 U.S.C. § 112, first paragraph

Claim 3 is rejected under 35 U.S.C. § 112, first paragraph as containing subject matter that was not described in the specification. Applicants traverse.

Claim 3 as amended in the Amendment filed November 26, 2002 replaces the term "subgroups" with the term "transition metals." These two terms are synonymous.

As evidence of the equivalence of the two terms, please find attached pages 708 and 709 of *Langenscheidt's Dictionary of Chemistry and Chemical Technology*. This reference clearly shows that the term "subgroup" is a valid translation of the German word "Nebengruppe." Please also find attached pages 4787 and 4788 of *Römpp Chemie Lexikon* that shows that the correct English translations of the German words "Übergangsmetalle" and

"Nebengruppenelemente" would properly corresponds to the English term "transition metals." That is, the portions of the periodic table that are covered by these German words clearly correspond to the transition metals.

Please additionally find page 1170 of *Hawley's Condensed Chemical Dictionary* which defines transition elements (metals). This definition notes that "All other elements, called 'major group' elements can use only outermost shell orbitals in bonding." A "subgroup," as a result, would fall within the transition elements according to Hawley's definition.

As a result, a person having ordinary skill in the art would recognize that that term "subgroups" is synonymous with the term "transition metals." Accordingly, this rejection is overcome and withdrawal thereof is respectfully requested.

Rejections Based Upon Sadoun

Claims 1-8, 10, 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Sadoun (USP 5,011,403). Claims 9, 12 and 14-17 are rejected under 35 U.S.C. 103(a) as being obvious over Sadoun. Claims 1-6 and 8-17 are rejected under 35 U.S.C. 103(a) as being obvious over Hechler (USP 5,618,585) in view of Sadoun. Applicants traverse.

Distinctions of the invention over Sadoun and Hechler were presented in the Amendment filed November 26, 2002. However, the Examiner fails to be convinced by these distinctions.

An important aspect of the invention is that the coloring solution is applied to a pre-formed (pre-sintered) dental ceramic. The coloring agents of Sadoun are added, in contrast, to the ceramic mixture before it is formed. Example 1 of Sadoun adds hydrated iron and nickel sulfates to the mixture (column 4, lines 18-21), then the mixture is pelletized and a crude blank is formed (column 4, lines 22-29).

Hechler uses a multi-coat technology where the first coat is used as a primer in order to minimize the porosity of the ceramic. Hechler thus teaches away from the invention, as is pointed out at page 10 of the Amendment filed November 26, 2002.

In her Response to Arguments, the Examiner asserts that the non-sintered ceramic of Sadoun would be porous, while ignoring that Sadoun accomplishes coloration by incorporating coloring compounds into the ceramic powder prior to forming. The Examiner additionally appears to consider the "pre-sintered state" limitation in claim 1 as a method step and does not refer to the treatment being performed prior to sintering.

However, the concept "pre-sintered" corresponds to a definite physical state in the ceramic denture art. In the making of ceramic dentures, a first step has ceramic powder mixed with a binder and pressed into a green body. Without this binder, the ceramic powder green body would simply disintegrate. In the technology of Sadoun, the dye is already added to the ceramic powder, with the result that the green body is already dyed. The inventive green body,

in contrast, remains undyed. In the ceramic denture art the green body is normally, i.e. also in the case of Sadoun and Hechler, fully sintered in one step and the fully sintered body is then shaped by milling in to the desired final shape.

Hechler also dyes a fully sintered body. The invention however utilizes a green body that is not fully sintered in a firing process, but is first pre-sintered, which means that the binder is evaporated out of the green body and the ceramic particles have begun to bake with each other. As the binder now no longer fills the intermediate spaces between the powder particles, as was still the case in the green body, this pre-sintered body displays an essentially higher porosity than the green body. This high porosity, which will markedly decrease again after the complete sintering process is finished (due to the continuous agglomeration of the powder particles) has use in the inventive process to dye to pre-sintered body. The inventive dyed pre-sintered body is then fully sintered so that the fully sintered body has the desired coloration and low porosity.

Sodoun and Hechler, therefore have fundamental technical differences from the invention. As further evidence of the true meaning of the concept "pre-sintered" in the ceramic art, attached please find pages 512 and 513 of D.W. Richersin, *Modern Ceramic Engineering: Properties, Properties Processing and Use in Design*, 2nd Edition, New York, Dekker 1992 (ISBN:0-8247-8634-3). At page 512 of Richersin, the term "bisque-fired" is used instead of the term "pre-

sintered." This description, however, describes that the ceramic part is fired at a high enough temperature to form bonds at particle contact points, but not at high enough temperature to produce densification. Sadoun and Hechler, in contrast, fully sinter in one step and are thus fundamentally different from this type of technology used in the present invention.

As additional evidence of the specific meaning of the term "pre-sinter" please find attached a copy of EP0 389 461 B1. The description in the paragraph starting at line 28 of EP '461 clearly sets forth the concept of pre-sintering and how the final sinter is used to close precocity.

Sadoun and Hechler, as has been shown, fail to disclose or suggest coloring the porous or absorbent ceramic in the pre-sintered state. As a result, Sadoun fails to anticipate the invention and a person having ordinary skill in the art would not be motivated by the teachings of Sadoun or Hechler in view of Sadoun to produce a claimed embodiment of the invention. Thus a *prima facie* case of obviousness has not been made over Sadoun or Hechler in view of Sadoun.

Accordingly, these rejections are overcome and withdrawal thereof is respectfully requested.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E.

Goozner, Ph.D. (Reg. No.42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Applicant respectfully petitions under the provisions of 37 CFR 1.136(a) and 1.17 for a one-month extension of time in which to respond to the Examiner's Office Action. The Extension of Time Fee in the amount of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachments: Langenscheidt's Dictionary of Chemistry... (Exhibit 1)
 Römpp Chemie Lexikon (Exhibit 2)
 Hawley's Condensed Chemical Dictionary (Exhibit 3)
 Modern Ceramic Engineering... (Exhibit 4)
 EP0 389 461 (Exhibit 5)